ABSTRACT OF THE DISCLOSURE

An apparatus for rotating a semiconductor substrate is provided which comprises a substrate holder for carrying the substrate thereon, a rotor for directly or indirectly supporting the substrate holder, a magnetic floating mechanism for magnetically floating and supporting the rotor in a non-contact state, and magnetic rotating mechanism for magnetically rotating the rotor. The magnetic floating mechanism and magnetic rotating mechanism are formed as a single integral unit structure. The unit structure includes a first set of windings for generating a magnetic field to provide the rotor with a rotating force, and a second set of windings for generating a magnetic field to float and support the rotor at a predetermined position. The first and second sets of windings are disposed on a single yoke plate made of a magnetic material.